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## On the Cayley Isomorphism Problem for a Digraph with 24 Vertices

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### Abstract

In this paper we are mainly concerned with the Cayley isomorphism problem for groups containing  $Q_8$ . We prove that the group  $Q_8 \times Q_3$  is not a  $CI$ -group with respect to colour ternary relational structures. Further, we prove that the non-nilpotent group  $C_3 \rtimes Q_8$  is not a  $CI$ -group with respect to graphs.

**Keywords:** Regular subgroup, Cayley isomorphism.

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## O Cayleyevem izomorfnostnem problemu za digraph s 24 vozlišči

### Povzetek

V tem članku se v glavnem ukvarjamo s Cayleyevim izomorfnostnim problemom za grupe, ki vsebujejo  $Q_8$ . Dokažemo, da grupa  $Q_8 \times Q_3$  ni *CI*-grupa glede na barvne ternarne relacijske strukture. Nadalje, dokažemo, da nenilpotentna grupa  $C_3 \times Q_8$  ni *CI*-grupa glede na grafe.

**Ključne besede:** Regularna podgrupa, Cayleyev izomorfizem.